



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,282	12/07/2000	John Michael Miller	200-0459	9416

7590

04/26/2002

JOHN F. BUCKERT  
FORD GLOBAL TECHNOLOGIES, INC.  
ONE PARKLANE BOULEVARD  
600 EAST PARKLANE TOWERS  
DEARBORN, MI 48126

EXAMINER

CORRIGAN, JAIME W

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 04/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/732,282	MILLER, JOHN MICHAEL	
	Examiner	Art Unit	
	Jaime W Corrigan	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment A filed on 3-8-02.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 and 22-36 is/are pending in the application.
- 4a) Of the above claim(s) 19-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,13-17 and 22-36 is/are rejected.
- 7) ☒ Claim(s) 3 and 5-12 is/are objected to.
- 8) ☒ Claim(s) 19-21 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

This Office Action is in response to an Amendment filed on 3-8-02. Claims 1, 13, 14, 17 have been amended. Claim 18 has been cancelled. Claims 22-36 have been added. Claims 19-21 are Non-elected. Overall, claims 1-17, 22-36 are pending in this application. The arguments with respect to the references applied in the first office action were deemed not persuasive. A final rejection is set forth below.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 27, 29-34, 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii (PN 5,964,192).

Regarding claims 17, 30-34, 36 Ishii discloses a valve controller (See Figure 1 (70)) for generating a commanded valve position current to control the incremental axial position of said valve; and, a position sensor (See Figure 1 (170)) generating a signal responsive to an axial position of said valve (See Column 6 Lines 14-16), and wherein said valve controller can vary an opening rate and a closing rate (See Figure 9, Column 3 Lines 5-13) of said valve.

Regarding claim 27, 29 Ishii discloses said camless (See Figure 3, Abstract) valve assembly can further adjust at least one of a valve dwell time, a valve closing rate,

Art Unit: 3748

a valve open dwell position, and an initial valve opening time (See Column 2 Line 62-67, Column 3 Lines 1-13).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 13, 15-16, 22-23, 26, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beblavi (PN 4,452,423) in view of Born (PN 5,592,905).

Beblavi discloses a rotor (See Figure 1A (28), (47)) centered about a first axis having a bore extending generally axially therethrough (See Figure 1A (Not numbered but clearly visible)), said rotor having a first helical groove (See Figure 1A (Not numbered but clearly visible)); a stator operatively disposed about said rotor for producing a torque to cause rotation of said rotor about said first axis (See Figure 1A (36), (38), Figure 3 (36), (38)), said stator being formed of a plurality of laminated plates (See Figure 1A (36), Column 3 Lines 23-27); a valve having a valve stem (See Figure 1A (49)) and a valve head (See Figure 1A (24)), said valve stem extending generally axially through said bore of said rotor, said valve stem having a second helical groove (See Figure 1A (Not numbered but clearly visible), said first and second helical grooves forming a raceway between said rotor and said valve stem for holding ball bearings

Art Unit: 3748

therein and, a plurality of ball bearings disposed within said raceway wherein said valve moves axially responsive to rotation of said rotor (See Column 4 Lines 42-68); said first direction of rotation of said rotor corresponds to a counterclockwise rotation with respect to said stator (See Column 1 66-68, Column 2 Lines 1-11).; said valve stem is threadably engaged with said rotor (See Figure 1A (Not numbered but clearly visible); said camless valve assembly includes an electrically driven ballscrew arrangement to axially move a valve head (See Figure 1A (24), (38), (36), (47)).

Beblavi fails to disclose to move said valve head against a valve seat in said engine to prevent gas flow into or out of an engine cylinder; a camless valve assembly adjusting an opening rate of said valve to control gas flow into said engine cylinder .

Born teaches that it is conventional in the art to utilize to move said valve head against a valve seat (See Abstract) in said engine to prevent gas flow into or out of an engine cylinder (See Column 1 Lines 17-20); a camless valve assembly having a valve communicating with said engine cylinder, said assembly adjusting an opening rate of said valve to control gas flow into said engine cylinder (See Column 2 Lines 60-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the gas flow control of an engine cylinder taught by Born with the Beblavi device since it would improve control of the variable valve timing control.

Claims 14, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diehl (PN 5,730,091) in view of Lund (PN 4,097,786).

Diehl discloses to selectively engage and disengage said valve head with a valve seat on a cylinder head of said engine (See Figure 1, Column 2 Lines 58-62).

Diehl fails to disclose a rotary electric actuator having a rotatable ballnut; and, a valve having a valve stem and a valve head.

Lund teaches that it is conventional in the art to utilize a rotary electric actuator having a rotatable ballnut (See Figure 5 (155), Column 6 Lines 8-26); and, a valve having a valve stem (See Figure 5 (157)) and a valve head (See Figure 5 (161)), said valve stem operatively connected to said ballnut (See Column 6 Lines 8-26), said valve stem configured to move generally axially responsive to the rotation of said ballnut to selectively engage and disengage said valve head (See Abstract, Column 6 Lines 8-26).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the actuator with a rotatable ballnut in the Diehl device since it would improve durability of the valve train.

Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diehl (PN 5,730,091) in view of Beblavi (PN 4,452,423).

Diehl discloses said valve head movement being stopped upon an indication that said valve head has seated against said valve seat (See Column 2 Lines 5-6, Lines 58-62); indication corresponds to a measured position of said valve head being equal to a predetermined position (See Column 2 Lines 32-37) of said valve when said valve head seats against said valve seat.

Art Unit: 3748

Diehl fails to disclose a valve operated by a rotor and stator.

Beblavi teaches that it is conventional in the art to utilize a rotor (See Figure 1A (28), (47)) centered about a first axis; a stator (See Figure 1A (36), (38), Figure 3 (36), (38)) operatively disposed about said rotor for producing a torque to cause rotation of said rotor about said first axis; and, a valve having a valve stem (See Figure 1A (49)) and a valve head (See Figure 1A (24)), said valve configured to move said valve head toward a valve seat of said engine when said rotor rotates in a first direction (See Abstract); indication corresponds to a measured position of said valve head being equal to a predetermined position (See Column 2 Lines 32-37) of said valve when said valve head seats against said valve seat.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the rotor and stator operated valve taught by Beblavi in the Diehl device since it would help alleviate gas leakage in the valve train.

***Allowable Subject Matter***

Claims 3, 5-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-6, 9-10, 13-17 have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Morinigo (PN 5,720,468), Ushirono (PN 5,669,341) disclose similar valve control systems.

Any inquiry concerning this communication from the examiner should be directed to Examiner Jaime Corrigan whose telephone number is (703) 308-2639. The examiner can normally be reached on Monday - Friday from 8:30 a.m. – 6:00 p.m. 2<sup>nd</sup> Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax number for this group is (703) 308-7763.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.


JC

April 23, 2002

Jaime Corrigan

  
Patent Examiner

Art Unit 3748

  
THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700